HEREDITY

Edited by

John Fincham FRS
Edinburgh

Roy Davies
Norwich

An International Journal of Genetics founded in 1947 by C D Darlington and R A Fisher and now owned by the Genetical Society of Great Britain

Volume 38
1977

Longman Group Limited
Edinburgh

PRINTED IN GREAT BRITAIN BY
T. AND A. CONSTABLE LIMITED, EDINBURGH

CONTENTS

PART 1. FEBRUARY

PAGE

GILL, AYESHA E. (Berkeley). Polymorphism in an Island Population of the California vole, *Microtus californicus*: Reproductive fitness of genotypes in differing controlled environments 1

BEGON, M. (Liverpool). The effective size of a natural *Drosophila suboscura* population 13

FOULDS, W. and YOUNG, L. (Rugeley and Worcester). Effect of frosting, moisture stress and potassium cyanide on the metabolism of cyanogenic and acyanogenic phenotypes of *Lotus corniculatus* and *Trifolium repens* . . 19

SNAPE, J. W., LAW, C. N. and WORLAND, A. J. (Cambridge). Whole chromosome analysis of height in wheat 25

MCCARTNEY, P. R., RENWICK, J. H. and MUNDAY, M. R. (London). The pattern of loci on *Drosophila* chromosomes 37

GALE, J. S., MATHER, K. and JINKS, J. L. (Birmingham). Joint Scaling Tests . 47

MCPHAIL, J. D. (Vancouver). Inherited interpopulation differences in size at first reproduction in threespine stickleback. *Gasterosteus aculeatus* L. . . 53

LALOUEL, J. M. (Honolulu). Linkage mapping from pair-wise recombination data 61

MARTIN, N. G., and EAVES, L. J. (Birmingham). The genetical analysis of covariance structure 79

MCARTHUR, E. DURANT (Ogden). Environmentally induced changes of sex expression in *Atriplex canescens* 97

GATTI, M., SANTINI, G., PIMPINELLI, S. and COLUZZI M. (Rome). Fluorescence banding techiques in the identification of sibling species of the *Anopheles gambiae* complex 105

KEARSEY, M. J., WILLIAMS, W. R., ALLEN, P. and COULTER, F. (Birmingham). Polymorphism for chromosomes capable of inducing female sterility in *Drosophila* 109

NOTES AND COMMENTS

MANNING, J. T. (Liverpool). The Evolution of Dominance: Haldane *v* Fisher revisited 117

CHAKRAVARTI, A. (Houston). Genetic differentiation in the colonising lizard, *Anolis grahami* 121

REVIEWS:

The Path to the Double Helix. Robert Olby. Macmillan (reviewed by B. M. Richards) 125

The Handling of Chromosomes. C. D. Darlington and L. F. La Cour. Allen and Unwin (reviewed by H. Rees) 126

The Demographic Evolution of Human Populations. Edited by R. H. Ward and K. M. Smouse, Academic Press (reviewed by J. C. Bear) 126

Evolution of Crop Plants. Edited by N. W. Simmonds. Longmans (reviewed by H. Rees) 128

PART 2. APRIL

PAGE

CULLIS, C. A. (Norwich). Molecular aspects of the environmental induction of heritable changes in flax 129

CHAUHAN, N. S. (Ranchi). Gene expression and transmission in *Kerria lacca* (Kerr) 155

DOW, M. A. (York). Selection for mating success of yellow mutant *Drosophila melanogaster*: biometrical genetic analysis 161

HARRISON, B. J. and CARPENTER, R. (Norwich). Somatic crossing-over in *Antirrhinum majus* 169

THOMPSON, J. N. Jr. and KAISER, T. N. (Norman, Oklahoma). Selection acting upon slow-migrating ADH alleles differing in enzyme activity 191

LYONS, N. F., GREEN, V. R., GORDON, D. H. and WALTERS, C. R. (Salisbury, Rhodesia). G-banding chromosome analysis of *Praomys natalensis* (Smith) from Rhodesia. I. 36 chromosome population 197

MACKAY, G. R. (Pentlandfield). A diallel cross method for the recognition of *S* allele homozygotes in turnip, *Brassica campestris* L. ssp. *rapifera* . . 201

CRIPS, P., JOHNSON, A. G., ELLIS, P. R. and HARDMAN, J. A. (Wellesbourne). Genetical and environmental interactions affecting resistance in radish to cabbage root fly 209

BRUMPTON, R. J., BOUGHEY, H. and JINKS, J. L. (Birmingham). Joint selection for both extremes of mean performance and of sensitivity to a macro-environmental variable. I. Family selection 219

HAZEL, W. N. (Blacksburg, Virginia). The genetic basis of pupal colour dimorphism and its maintenance by natural selection in *Papilio polyxenes* (Papilionidae: Lepidoptera) 227

VIRK, D. S. and JINKS, J. L. (Birmingham). The consequences of using inadequate testers in the simplified triple test-cross 237

NOTES AND COMMENTS:

DOUGLAS, L. and NOVITSKI, E. (Nijmegen and Oregon). What chance did Mendel's experiments give him of noticing linkage? 253

HURST, R. (Horsham). Further note on the Hurst collection of genetical material in the Cambridge University library 259

REVIEWS:

The Genetics of Behaviour. L. Ehrman and P. Parsons. Sinauer Associates. (Reviewed by B. Burnet) 261

The Science of Genetics. W. Hexter and H. T. Yost, Jr. Prentice-Hall. (Reviewed by B. L. Cohen). 262

Tropical Trees, Variation, Breeding and Conservation. J. Burley and B. T. Styles (Eds.). Academic Press. (Reviewed by R. W. Mellors) 263

The Principles of Human Biochemical Genetics. Harry Harris. North-Holland and American Elsevier. (Reviewed by P. F. Benson) . . 265

An Introduction to Genetic Analysis. D. T. Suzuki and A. J. F. Griffiths. W. H. Freeman. (Reviewed by G. Richards) 266

GENETICAL SOCIETY OF GREAT BRITAIN: Abstracts of papers 269

PART 3. JUNE

PAGE

Ross, M. D. (Palmerston North). Behaviour of a sex-differential fertility gene in hermaphrodite populations 279

Woodruff, R. C. and Thompson, J. N. Jr (Cambridge and Oklahoma). An analysis of spontaneous recombination in *Drosophila melanogaster* males: isolation and characterisation of male recombination lines 291

Lin, C. S., Binns, N. R. and Thompson, B. K. (Ottawa). The use of regression methods to study genotype-environment interactions—extending Griffing's model for diallel cross experiments and testing an empirical grouping method 309

Manly, B. F. J. (Otago). A new index for the intensity of natural selection . 321

Pooni, H. S., Jinks, J. L. and Cornish, M. A. (Birmingham). The causes and consequences of non-normality in predicting the properties of recombinant inbred lines 329

Ellis, W. M., Keymer, R. J. and Jones, D. A. (Hull). The effect of temperature on the polymorphism of cyanogenesis in *Lotus corniculatus* L. . . . 339

Gavazzi, G., Sandri, M., Anzani, G. and Ghidoni, A. (Milan). Chromosomal instability associated with duplications in maize. 349

Child, A. R. (Lowestoft). Biochemical polymorphism in char (*Salvelinus alpinus L*) from Llynnau Peris, Padarn, Cwellyn and Bodlyn . . . 359

Oxford, G. S., and Andrews, T. (York). Variation in characters affecting fitness between radiate and non-radiate morphs in natural populations of groundsel (*Senecio vulgaris* L). 367

Yen, T. T., Shaw, W. N. and Pao-lo Yu (Indianapolis). Genetics of obesity in Zucker rats and Koletsky rats 373

Linney, R. (Birmingham). Polymorphism at two loci through selection for linear metric deviation 379

Nishio, T. and Hinata, K. (Tohoku). Analysis of S-specific proteins in stigma of *Brassica oleracea* L. by isoelectric focusing. 391

Abbott, R. J. (St. Andrews). A quantitative association between soil moisture content and the frequency of the cyanogenic form of *Lotus corniculatus* L. at Birsay, Orkney 397

Notes and Comments:

Walters, D. E. and Gale, J. S. (Cambridge and Birmingham). A note on the Hayman analysis of variance of a full diallel table . . . 401

Hung, A. C. F. and Vinson, S. B. (Texas). Electrophoretic techniques and genetic variability in Hymenoptera 409

Simmonds, N. W. (Edinburgh). Approximations for *i*, intensity of selection 413

Index of Authors 415

Index of Species 417

Index of Subjects 419